

device, 11...Conductor, 12...Solder ball, 13...Adhesive material.

The above embodiments of the present invention are intended to illustrate the invention and are not to be construed to limit the scope of the invention. Those skilled in the art can apply this invention to various embodiments without departing from the spirit of this invention.

10 WHAT IS CLAIMED IS:

1. A device for controlling a vehicle comprising:  
a housing;

a rectangular printed circuit board fixed to the inside of said housing and having a control circuit thereon; and

plugs provided along one side of the rectangular printed circuit board to transfer signals between the inside and the outside of said housing;

wherein said plugs respectively contain plug pins and the plug pins are electrically connected to said printed circuit board via bonding wires inside said housing.

2. The device for controlling a vehicle according to claim 1, wherein

said printed circuit board is rectangular and

said plugs are arranged on said printed circuit board along the longitudinal side thereof.

3. The device for controlling a vehicle in accordance with claim 1, wherein

5       said bonding wires are members of a flexible cable.

4. The device for controlling a vehicle in accordance with claim 1, wherein

said plugs comprise a first plug which transfers signals related to engine controlling

10       and a second plug which transfers signals related to vehicle controlling.

5. The device for controlling a vehicle in accordance with claim 1, wherein

15       a grounding pin is provided on the inner wall of said housing between said plugs to ground said printed circuit board and said grounding pin is connected to said printed circuit board via a bonding wire.

6. The device for controlling a vehicle according to claim 1, wherein

20       said printed circuit board has a control circuit made up with modules which perform preset functions.

7. The device for controlling a vehicle in accordance with claim 6, wherein

25       said printed circuit board is rectangular,  
said plugs comprise a first plug which transfers

signals related to engine controlling

and a second plug which transfers signals related to vehicle controlling,

said first and second plugs are arranged along the longitudinal side of said rectangle and respectively close to each shorter side thereof,

a first module containing a CPU to control the other modules is provided about in the longitudinal center of said printed circuit board,

a second module to perform a processing related to engine controlling is provided closer to said first plug than said first module, and

a third module to perform a processing related to vehicle controlling is provided closer to said second plug than said first module.

8. A device for controlling a vehicle comprising:  
a housing;

a printed circuit board fixed to the inside of said housing and has a control circuit made up with modules which perform preset functions;

plugs for transferring signals between the inside and the outside of said housing; and

plug pins in each plug electrically connected to said printed circuit board via bonding wires inside said housing.

9. The device for controlling a vehicle in accordance with claim 8, wherein

said printed circuit board is rectangular,

a first module containing a CPU to control the  
5 other modules is provided about in the longitudinal  
center of said printed circuit board, and

a second module to perform a processing related to  
engine or vehicle controlling is provided  
longitudinally next to said first module.

10 10. The device for controlling a vehicle in  
accordance with claim 8, wherein

said printed circuit board has a multi-layer  
circuit structure comprising a first ceramic layer, a  
second layer which is provided on said first layer and  
15 has a power supply pattern and a ground pattern  
thereon, a third layer which is provided on said  
second layer and has a resistive element thereon, and  
a fourth layer having wiring patterns of said modules.

11. The device for controlling a vehicle in  
20 accordance with claim 8, wherein

at least one of said modules has a multi-layer  
supporting board whose layers are separated from each  
other by an insulating ceramic layer and electrically  
interconnected via through-holes.

25 12. The device for controlling a vehicle in

accordance with claim 11, wherein any of said layers contains resistor and capacitive elements.

13. The device for controlling a vehicle in accordance with claim 8, wherein at least one of said  
5 modules has a silicone-made supporting board.

14. The device for controlling a vehicle in accordance with claim 8, wherein at least one of said modules has a resin-made supporting board.

15. The device for controlling a vehicle in  
10 accordance with claim 8, wherein at least one of said modules has a multi-layer supporting board which is separated into layers by a metallic core layer and an insulating resin layer and said layers are electrically interconnected via through-holes or inner  
15 via-holes.